

Date: Thu, 17 Mar 94 04:30:26 PST  
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>  
Errors-To: Ham-Ant-Errors@UCSD.Edu  
Reply-To: Ham-Ant@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Ant Digest V94 #69  
To: Ham-Ant

Ham-Ant Digest                      Thu, 17 Mar 94                      Volume 94 : Issue    69

Today's Topics:

        Cheap 2M portable antenna  
        Compact, portable 2 meter antennas  
        LOOP ADVICE NEEDED!!! HELP ME PLEASE!  
        portable yagi  
        Question about mobile antenna 40/80m (2 msgs)

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>  
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: Wed, 16 Mar 1994 17:30:34 GMT  
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!  
europa.eng.gtefsd.com!emory!wa4mei!ke4zv!gary@network.ucsd.edu  
Subject: Cheap 2M portable antenna  
To: ham-ant@ucsd.edu

In article <CMpnpL.216@cscsun.rmc.edu> dtiller@cscsun.rmc.edu (David Tiller)  
writes:

>Jim Glover (UDSD022@DSIBM.OKLADOT.STATE.OK.US) wrote:  
>: I brought the HT to work with me today, and found out that it  
>: doesn't work worth a flip here in the office using the ducky.  
>: I'd like to hold the spending down to a couple of bucks here.  
>: One idea that occurs to me is to fashion a 1/4 wave dipole  
>: from coax by folding back 1/4 wave of the outer shield. Let's  
>: see... a dipole is nominally 75 ohms.  
>  
>A quarterwave vertical is more like 37 ohms without drooping radials.  
>Look in QST for an article about making a j-pole out of 300 Ohm twin lead.

>Very portable, very good characteristics.

What he's describing is not a quarterwave vertical. It's a halfwave vertical dipole fed coaxially through one element. This was a popular commercial design years ago called the coaxial sleeve dipole, and works fine. It has the same feedpoint impedance as any other dipole, 50~75 ohms.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

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Date: 15 Mar 1994 23:23:04 -0500  
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!howland.reston.ans.net!news.ans.net!  
hp81.prod.aol.net!search01.news.aol.com!not-for-mail@network.ucsd.edu  
Subject: Compact, portable 2 meter antennas  
To: ham-ant@ucsd.edu

Check out 73 magazine's antenna book - an old edition in the Ridgefield Library has a take apart 2 meter beam on page 251. (I think the book is called "The Giant Book of Amateur Radio Antennas", or something like that.

Two booms (38 cm and 56 cm) fit together (with a dowel plug) to make the boom... the reflector and director are pulgged in with Millen #37222 binding posts, and banana plugs attach the elements.  
The driven elements are mounted with a ceramic insulator, and RG58-U is used to drive it (the shield and center connector are attached to the two quarter wave dipole elements)

51 cm reflector, 48 cm driven, 47 cm director, on each side of the boom.

I have not built it, but will soon. :)

Jose KD1SB

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Date: 16 Mar 94 15:42:56 EST  
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!  
howland.reston.ans.net!wupost!gumby!wmichgw!x90galbrait1@network.ucsd.edu  
Subject: LOOP ADVICE NEEDED!!! HELP ME PLEASE!  
To: ham-ant@ucsd.edu

Dear friends,

I want to erect an efficient antenna for 160-10, but will settle for 80-10 as I work mostly on 80/75,40,and 20m...

I have just enough space (and a 60ft mast) to put up a 40m full-wave (120ft) delta loop (fed at 60ft with ladder or twin lead).

Would this be as effective, more effective, or less effective for all around use on especially the lower frequencies?

Should I feed it at a place other than the very top (side, or other-would that give different polarization).

What would be the best feedline? 300ohm twin lead, 450 ohm ladder line?

Also, what is a good tuner to use? I like the Dentron MT3000A (still pricy though)...

Any advise would we warmly appreciated!!!

73s and take care!!

Chris, KA8WFC

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Date: 15 Mar 1994 23:22:02 -0500  
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!howland.reston.ans.net!news.ans.net!  
hp81.prod.aol.net!search01.news.aol.com!not-for-mail@network.ucsd.edu  
Subject: portable yagi  
To: ham-ant@ucsd.edu

Check out 73 magazine's antenna book - an old edition in the Ridgefield Library has a take apart 2 meter beam on page 251. (I think the book is called "The Giant Book of Amateur Radio Antennas", or something like that.

Two booms (38 cm and 56 cm) fit together (with a dowel plug) to make the boom... the reflector and director are pulgged in with Millen #37222 binding posts, and banana plugs attach the elements.  
The driven elements are mounted with a ceramic insulator, and RG58-U is used to drive it (the shield and center connector are attached to the two quarter wave dipole elements)

51 cm reflector, 48 cm driven, 47 cm director, on each side of the boom.

I have not built it, but will soon. :)

Jose KD1SB

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Date: Tue, 15 Mar 1994 21:55:20 GMT  
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!news.intercon.com!udel!  
news.sprintlink.net!direct!news.direct.net!kg7bk@network.ucsd.edu  
Subject: Question about mobile antenna 40/80m  
To: ham-ant@ucsd.edu

Jack GF Hill (root@jackatak.raider.net) wrote:

: My antenna is approaching a full 5/8 wave on 10 meters without much coil!  
: Yours is still a 1/4 wave trapped compromise... 73 Jack, W4PPT/Mobile

No argument that your Bug Catcher is vastly superior on 75m. But I wonder about a bumper-mounted 5/8 vs a top-of-pickup-cab mounted 1/4 wave on 10m. I've heard that the bumper mount loses a more than negligible amount of power because of the parallel car body. I've also heard that a 5/8 without a large ground plane directly underneath is inferior to a 1/4 wave with a large ground plane directly underneath. Have you ever made any field strength measurements directly in front of the car vs directly behind it? I'll bet I radiate more energy directly ahead on 10m than you do (running the same power).

73, Cecil, kg7bk@indirect.com

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Date: Wed, 16 Mar 1994 17:06:27 GMT  
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!  
howland.reston.ans.net!wupost!udel!news.sprintlink.net!direct!news.direct.net!  
kg7bk@network.ucsd.edu  
Subject: Question about mobile antenna 40/80m  
To: ham-ant@ucsd.edu

Jack GF Hill (root@jackatak.raider.net) wrote:

: The overall height of my antenna is 13'6", with about 6' of heavy  
: stainless whip above a capacity hat that adds about 48" to the  
: effective height of the antenna. However, my BugCatcher,  
: with an appropriate tap for the coil, will STILL outperform your  
: antenna significantly... My antenna is approaching a full 5/8 wave on  
: 10 meters without much coil! 73 Jack, W4PPT/Mobile

Hi again Jack, my friend W5GYJ just pointed out that a 5/8 wavelength at 29.5 MHz is 21'7". Exactly how are you tuning your antenna in "approaching a full 5/8 wave on 10 meters"?

In my previous posting I should have said that I am probably radiating more energy AFT than you are.

73, Cecil, kg7bk@indirect.com

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Date: Wed, 16 Mar 1994 18:42:06 GMT  
From: news.cerf.net!pravda.sdsc.edu!acsc.com!wp-sp.nba.trw.com!elroy.jpl.nasa.gov!  
swrinde!cs.utexas.edu!howland.reston.ans.net!europa.eng.gtefsd.com!news.umbc.edu!  
eff!news.@ihnp4.ucsd.edu  
To: ham-ant@ucsd.edu

References <fred-mckenzie-090394104409@k4dii.ksc.nasa.gov>,  
<uP75ic3w165w@jackatak.raider.net>, <CMrrous.3F3@news.direct.net>inde  
Subject : Re: Question about mobile antenna 40/80m

Cecil Moore (kg7bk@indirect.com) wrote:  
: Jack GF Hill (root@jackatak.raider.net) wrote:

: : The overall height of my antenna is 13'6", with about 6' of heavy  
: : stainless whip above a capacity hat that adds about 48" to the  
: : effective height of the antenna. However, my BugCatcher,  
: : with an appropriate tap for the coil, will STILL outperform your  
: : antenna significantly... My antenna is approaching a full 5/8 wave on  
: : 10 meters without much coil! 73 Jack, W4PPT/Mobile

: Hi again Jack, my friend W5GYJ just pointed out that a 5/8 wavelength  
: at 29.5 MHz is 21'7". Exactly how are you tuning your antenna in  
: "approaching a full 5/8 wave on 10 meters"?  
Also, shouldn't your antenna have capacitive reactance on 10m? Seems it  
is between 1/4 and 1/2 wavelength. Do you use an antenna tuner by any  
chance?

: In my previous posting I should have said that I am probably radiating  
: more energy AFT than you are.

: 73, Cecil, kg7bk@indirect.com

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Date: Wed, 16 Mar 1994 15:56:33 GMT  
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!emory!wa4mei!ke4zv!  
gary@network.ucsd.edu  
To: ham-ant@ucsd.edu

References <CMo7GF.4sy@srgenprp.sr.hp.com>,  
<1994Mar15.145856.8336@ke4zv.atl.ga.us>, <2m4rsv\$mba@bigfoot.wustl.edu>

Reply-To : gary@ke4zv.atl.ga.us (Gary Coffman)  
Subject : Re: Grounding and lightning protection

In article <2m4rsv\$mba@bigfoot.wustl.edu> jlw3@cec3.wustl.edu (Jesse L Wei) writes:

>Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

>

>: Mobile Radio Technology had a series in the April and October 1988,  
>: and January 1989 issues about lightning prevention systems. They  
>: tried to give both sides equal time, but it's clear that the dissipation  
>: arrays are at best only minimally preventative, if at all.

>

>Now I have no technical expertise here, but I'd like to ask a couple  
>of questions: 1) Does the Corona effect prevent strikes, 2) do spline  
>balls work, 3) what about "feeler" charges? The reason I ask is that  
>Richardson Wireless Klub (K5RWK) had a meeting last night in which  
>a Richardson ham (I think) who works for TU Electric came and gave a  
>~1.5 hour lecture on lightning, prevention, and RF grounding. He  
>brought up some of the above-mentioned issues, and also said at the  
>end that he submitted an article to "one of the ham magazines."

>Your thoughts???

First I want to note that I'm coming from the perspective of someone involved in protecting broadcast transmission systems, and as someone with lightning simulator experience. Also the local area has a thunderstorm frequency second only to Florida in the US. So I've seen a lot of strikes, and have a feel for what works and what doesn't. What I can't supply is much in the way of formal theory on the subject, only my reading of the trade press and a fair bit of other literature on the subject.

With that disclaimer out of the way, I'll give you my thoughts on your questions.

- 1) Corona, or point dischargers, are limited to about 20-60 microamps before streamer production begins. Streamers are the main mechanism by which near Earth lightning strikes are guided. So if corona breaks over into streamer production, you're going to attract lightning.

That's the principle on which lightning rods are founded. They generate streamers so that they are the preferred target of lightning bolts. Since they are installed with low impedance paths to ground, they are able to \*divert\* strike currents from harming other nearby structures. This is called the "cone of protection". It's diameter is equal to about 1/3 the HAAT of the lightning rod in most installations. (High towers have other problems, and a "rolling sphere" method of estimating the protective zone must be used.)

- 2) The idea behind "spline balls", and other dissipation systems, is

to multiply the number of point dischargers so that currents can be shared so as to keep any one point's current below the streamer threshold. It's a good idea in theory, but in practice if the points are close together, their corona merges and forms streamers.

Remember that a typical strike is powered by about 20 coulombs of charge, and that individual points can't exceed about 60 ua without breaking into streamer production. So even if you have widely separated points to prevent merger, you still need an incredibly large number of them, especially if the cloud is capable of multiple strikes, which is the usual case. Also remember that cloud charge zones are in constant motion, and constantly inducing "mirror" charges in the ground below, so you don't have much *\*time\** to discharge the currents safely.

The idea of a "protective space charge" is pure hokum IMHO. The winds in a storm are going to blow away any ions formed by corona as quickly as they can be produced.

- 3) I'm not familiar with the term "feeler charge" so I'll have to defer a response on that subject.

I'll add one more thought. There's a theory that if you can cause a *\*lot\** of *\*little\** lightning bolts, you can avoid the big dangerous ones. These "mini" bolts are supposedly so small that you can't see their strikes with the naked eye, but can measure them on a surge counter. This idea *\*may\** work if the storm clouds aren't very energetic, and take *\*minutes\** to build up to a strike, but I don't think it works in practice with the big thunderboomers we typically see.

Gary

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Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

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Date: Wed, 16 Mar 1994 14:13:06  
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!howland.reston.ans.net!  
usenet.ins.cwru.edu!eff!news.kei.com!ssd.intel.com!chnews!ornews.intel.com!  
ccm.hf.intel.com!brett\_miller@network.ucsd.edu  
To: ham-ant@ucsd.edu

References <1994Mar15.145856.8336@ke4zv.atl.ga.us>,  
<2m4rsv\$mba@bigfoot.wustl.edu>, <1994Mar16.155633.14996@ke4zv.atl.ga.us>

Subject : Re: Grounding and lightning protection

In article <1994Mar16.155633.14996@ke4zv.atl.ga.us> gary@ke4zv.atl.ga.us (Gary Coffman) writes:

(snip)

> That's the principle on which lightning rods are founded. They generate  
> streamers so that they are the preferred target of lightning bolts. Since  
> they are installed with low impedance paths to ground, they are able to  
> \*divert\* strike currents from harming other nearby structures. This is  
> called the "cone of protection". It's diameter is equal to about 1/3  
> the HAAT of the lightning rod in most installations. (High towers have  
> other problems, and a "rolling sphere" method of estimating the protective  
> zone must be used.)

(snip)

This is what I am having a hard time understanding. I am told that if I put things on my roof like antennas and solar panels, that they should be grounded with heavy guage wire etc. Sounds to me like I'm just turning all my roof ornaments into lightning rods! Wouldn't it be better to leave them ungrounded and install a lightening rod on the roof?

Brett Miller N70LQ  
Intel Corp.  
American Fork, UT

brett\_miller@ccm.hf.intel.com

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Date: 16 Mar 94 16:21:43 PDT  
From: ihnp4.ucsd.edu!library.ucla.edu!csulb.edu!nic-nac.CSU.net!clstcs!  
armyrman@network.ucsd.edu  
To: ham-ant@ucsd.edu

References <2m4rsv\$mba@bigfoot.wustl.edu>,  
<1994Mar16.155633.14996@ke4zv.atl.ga.us>,  
<brett\_miller.15.000E3859@ccm.hf.intel.com>  
Subject : Re: Grounding and lightning protection

In article <brett\_miller.15.000E3859@ccm.hf.intel.com>,  
brett\_miller@ccm.hf.intel.com (Brett Miller - N70LQ) writes:

> This is what I am having a hard time understanding. I am told that if  
> I put things on my roof like antennas and solar panels, that they should be  
> grounded with heavy guage wire etc. Sounds to me like I'm just turning all my  
> roof ornaments into lightning rods! Wouldn't it be better to leave them  
> ungrounded and install a lightening rod on the roof?  
>



I too have antennas up on the roof and a couple long wire (dipoles) hanging around off the house.

What should be done when lightning comes? I understand clearly that they should NOT be in the radio but where should the lead-in's go?

I have a heavy ground run to the radio room for grounding the equipment. Should the antennas be connected to this, grounding the center conductor and shield? Should they be grounded and a real lightning rod be installed? Or just disconnected from the radio's?

---

Alex R. Myrman - KC6TMB - armyrman@vms4.sci.csupomona.edu  
College of Science Computational Systems - (909) 869-4226  
California State Polytechnic University, Pomona, CA. USA

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End of Ham-Ant Digest V94 #69  
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